Log Event A

Borehole # 40-05-03

Borehole Information

Farm : S	**Tank :** S-105	**Site Number :** 299-W23-154
N-Coord : 36,140	**W-Coord :** 75,724	**TOC Elevation :** 663.00
Water Level, ft :	**Date Drilled :** 10/31/1971	

Casing Record

Type : Steel-welded	Thickness : 0.258	ID, in. : 5
Top Depth, ft. : 0	Bottom Depth, ft. : 100	

Borehole Notes:
This borehole was drilled in October 1971. The borehole was started with a 20-ft length of surface casing of unknown diameter and completed at a depth of 100 ft with 5-in.-diameter casing. The surface casing was apparently withdrawn at completion. Chamness and Merz (1993) list this borehole as being completed with 6-in. casing; however, the 5-in. casing was confirmed by visual inspection. There is no indication from the driller's log and other available records that the borehole was perforated or grouted. The casing wall thickness is assumed to be 0.258 in., based on the published thickness of schedule-40, 5-in. steel tubing.

The zero reference for the SGLS logs is the top of the casing. The top of the casing is approximately 1.5 ft above the surrounding ground level.

Equipment Information

Logging System : 2	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 05/1996	**Calibration Reference :** GJPO-HAN-5	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 06/12/1996	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 35.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 06/13/1996	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 100.5	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 34.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

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Borehole 40-05-03

Analysis Information

Analyst : D.L. Parker

Data Processing Reference : P-GJPO-1787 Analysis Date : 03/13/1997

Analysis Notes :

This borehole was logged in two log runs with a centralizer used for each log run. The pre- and post-survey field verification spectra for each log run met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration from the field verification spectra that most closely matched the spectra acquired during logging operations established the channel-to-energy parameters used in the processing of the data files.

Casing correction factors for a 0.250-in.-thick casing were applied during the analysis; correction factors for a 0.258-in. thick casing were not available. Accordingly, the radionuclide concentrations calculated with this casing correction factor will be slightly lower than the actual concentrations.

The depth encoder erroneously recorded the 77.5-ft depth as 27 ft. Since this was a single occurrence, with no indication of other depth errors, processing of this spectrum was continued using the corrected depth.

Cs-137 was the only man-made radionuclide detected in this borehole. Cs-137 contamination was detected almost continuously from the ground surface to a depth of 5.5 ft and from 6.5 to 22.5 ft. Cs-137 contamination was also detected at depths of 23.5, 35.5, 36, 89, and 100.5 ft. The maximum Cs-137 concentration was about 23 pCi/g at 1.5 ft.

The logs of the naturally occurring radionuclides show an increase at about 48 and a decrease from about 58 to 64 ft. Another increase in KUT concentrations occurs at a depth of about 65 ft.

The SGLS total count log plot reflects the log plots of the man-made and naturally occurring radionuclides.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Reports for tanks S-104 and S-105.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The naturally occurring radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes both the man-made and naturally occurring radionuclides, the total-count log plot, and the Tank Farm gross-gamma log. The Tank Farm gross-gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma log plot to coincide with the SGLS data.